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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,168	08/29/2005	Burkhard Kohler	100717-670-KGB	8879
27384	7590	11/21/2006	EXAMINER	
NORRIS, MCLAUGHLIN & MARCUS, PA			HAQ, SHAFIQL	
875 THIRD AVENUE			ART UNIT	
18TH FLOOR			PAPER NUMBER	
NEW YORK, NY 10022			1641	

DATE MAILED: 11/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/540,168

Applicant(s)

KOHLER ET AL.

Examiner

Shafiqul Haq

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. Applicant's amendments filed August 21, 2006 is acknowledged and entered.
2. Claims 5 has been cancelled and new claims 16 and 17 have been entered.
3. Therefore, claims 1-4 and 6-17 are pending and under active prosecution.

#### ***Information disclosure statement***

4. NPL and foreign patent documents cited in IDS have not been considered because copies of those documents were not provided. In order to be in compliance with MPEP 609, III, A (2), applicants must provide copies of all of the references cited in the IDS. These references will become part of the official file of this application. Upon receipt of the missing documents, they will be considered by the examiner when preparing the next office action and a signed copy of form PTO-1449 will be provided with the next office action.

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4 and 6-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claim 1 recites the phrase "mixing components of the nanoparticles" in line 2. It is unclear what "components" are encompassed by the term "components of the nanoparticles".

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8. Claim 1 recites the phrase "a second functional group for binding to further molecules". The term "Further molecules" is not defined in the specification and it is not clear what "molecules" are encompassed by the term "further molecules". Does the term "further molecule" include another molecule of nanoparticle or molecules other than nanoparticle?
9. With respect to claim 2, the recitation "which can also, in addition be doped" in line 5 is not a positive recitation and thus the term may be interpreted as the doping with lanthanides and/or other metals are not a required component of claimed invention.
10. With respect to claim 11, compounds of formula (IV) do not read on the modifying agent as described in amended claim 1. Compounds of formula (IV) ester of phosphate groups (i.e.  $(RO)_2(O)P-CH_2-$  groups) for coupling to nanoparticles but do not have second functional group for binding to further molecules because alkyl group of compound (IV) (i.e. "Alk") is not a functional group for binding to other molecules.
11. With respect to claim 10, the amended claim 10 contradicts with the teaching of claim 1. Claim 10 recites "synthesis period comprises a period of time which elapses before the modifying reagent is added" whereas claim 1 recites "adding modifying reagent to synthesis mixture within the synthesis period". Therefore, the teachings are contradictory and unclear as to the reaction time and period the modifying reagent is reacted with the synthesis mixture.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-3 and 6 are again rejected under 35 U.S.C. 102(e) as being anticipated by Haubold et al (US 2003/0032192A1).

Haubold et al disclose synthesis of metal salt nanoparticles (paragraphs [0001] and [0021]) comprising synthesizing the nanoparticle in a synthesis mixture (paragraph [0022]) and growing the nanoparticle wherein growth of the nanoparticle is controlled by growth controlling element (i.e. modifying reagent. e.g. phosphororganic compound, an amine compound, monoalkyl amine, dialkyl amine etc.) (paragraphs [0023], [0041], [0056], [0074-0076], [0115-0116] and [0134]) suitable for subsequent use of the nanoparticles after synthesis. Haubold et al. also disclose modifying reagent comprising first functional group (e.g. phosphate group) for coupling to nanoparticles and a second functional group (e.g. carboxylate) capable of binding to further molecules (see claims 3 and 6 and the fig. in front page). See claim 3 of Haubold, which discloses growth-controlling component comprising phosphate group and carboxylic acid group (see claim 6, wherein R1, R2

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and R3 of claim 1 are alkane chains carry at least one carboxylate group, amino groups, mercapto group, cyano group etc.).

As for claims 2-3, Haubold et al disclose nanoparticles in which host material can include compounds selected from phosphates, halophosphates, borates, aluminates, silicates, molybdates and germanates ([paragraph 0021]), all of which can also, in addition, be doped with one or more elements of lanthanides and/or Mn, Ag, Cu, Pb, Bi, Cr, Sn or Sb (paragraphs [0105], [0108-0111] and claims 8,19-34).

Therefore, the reference is deemed to anticipate the cited claims.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 4 and 14-15 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Haubold et al.

See above for teaching of Haubold et al.

Haubold et al differ from the instant invention in failing to teach different concentrations of doping elements in host lattice.

As evidenced from the requirement of a wide range on concentration of doping elements (see claims 4 and 14-15), the concentration of doping elements in host lattice is not critical to the practice of this invention and the optimum concentration of doping elements in host lattice can be determined by routine experimentation and

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thus would have been obvious to one of ordinary skill in the art to discover an optimum value of a result effective variable. "[W]here the general conditions of claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." Application of Aller, 220 F.2d 454,456, 105 USPQ 223, 235-236 (C.C.P.A. 1955). "No invention is involved in discovering optimum ranges of a process by routine experimentation." Id. At 458,105 USPQ at 236-237. The "discovery of an optimum value of a result effective variable is a known process is ordinary within the skill of the art." Application of Boesch, 617 F.2d 272,276,205 USPQ 215, 218-219 (C.C.P.A. 1980).

### ***Response to Argument***

16. Applicant's amendments and arguments filed 10/21/06 have fully been considered, and are persuasive to overcome the rejections under 35 USC 112 2<sup>nd</sup>, 35 USC 112 1<sup>st</sup> paragraph and 35 USC 101, but they are not persuasive to overcome the rejections under 35 USC 102 and 35 USC 103. Furthermore, Applicant's amendments necessitated new ground of rejections under 35 USC 112 2<sup>nd</sup> paragraph as described in this office action.

With regard to 35 USC 102 and 103 rejections over Haubold et al., Applicants argued that Haubold et al. do not disclose modifying agent exhibiting a first functional group for coupling to nanoparticle and a second functional group for binding to further molecules. This is however, not convincing because as described in paragraph 13 above, Haubold et al. disclose modifying agents such as esters of phosphinic acid, diesters of phosphonic acid  $\{(R_1-)(R_2-)(R_3-O-)P=O; (R_1-)(R_2O-)(R_3-$

O-)P=O} (see claim 3) wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> = alkane chains carry at least one carboxylate group, amino groups, mercapto group, cyano group etc. Therefore, the above growth controlling phosphoorganic compound comprises at least two functional groups: a first functional group (e.g. phospho group for coupling to nanoparticle; see the fig. on front page) and a second functional group (e.g. carboxylate, amino, mercapto and cyano) capable of binding to further molecules as claimed in claim 1 of present application.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection (35 USC 112 2<sup>nd</sup>) presented in this Office action. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hoheisel et al. US Patent Application Publication Number 2004/0014060 A1, disclose nanoparticles comprising a wide variety of host materials doped with lanthanides and other metals but do not disclose modifying reagents (i.e. growth controlling elements) in the preparation of nanoparticles.

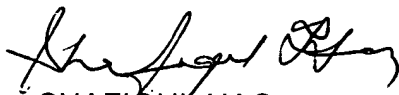



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19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shafiqul Haq whose telephone number is 571-272-6103. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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